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The U. S. Army was going on 215 years of age in February of 1991 when it overwhelmed the formations of Saddam Hussein south of the Euphrates River. Military intelligence had been around for the U.S. Army's entire lifetime, often no more than an afterthought in its youth but increasingly critical to its successes as it matured. It was in Vietnam that the discipline of intelligence learned its lessons and emerged in the U.S. Army as a well organized body of expertise designed to respond to the needs of the combat commander, a doctrinal awakening championed by Lt. Gen. Phillip Davidson and others. The Army's Military Intelligence Corps, established in 1987, was vetted in the operations in Grenada, Panama, and finally, in the Persian Gulf. The man riding the crest of MI's success during this coming-of-age was a disciple of General Davidson and a person who had been called "a true intelligence professional," Maj. Gen. John F. Stewart.

Stewart was from Niles, California, where he grew up, married his high school sweetheart, and went to school at San Jose State. When he graduated with a B.A. in English, he had two choices. One was to accept a scholarship to Stanford, the other was a lieutenant's commission in the U.S. Army. Since Stanford agreed to hold his scholarship for the duration of his three-year hitch, the decision was made easier. He and his wife, Patti, chose the Army for what they thought would be a lark, a chance to see some of the world. Besides, being from a military family, he felt that he had a patriotic obligation.¹ Twenty-two-year-old John Stewart became an infantry officer in 1962, at a time when an American advisory effort in conflict-torn South Vietnam was giving way to a wider U.S. involvement.

His first assignment was with an Ordnance Battalion in Italy where he guarded nuclear munitions, and then with the 1st Battalion (Airborne), 509th Infantry, in Mainz, Germany. He and his wife liked a party, and there were a lot of those around the U.S. Army establishment in Europe where a collegial spirit prevailed. It was the challenge and this sense of belonging to a special family that convinced the Stewarts to stay in the service. The airborne infantry officer changed his branch to military intelligence, a decision prompted by his responsibilities to his family, and enrolled in the advanced MI course and a Counterintelligence course at Fort Holabird. This made him one of the first Army officers to wear the branch insignia of Military Intelligence. An Army Intelligence

and Security Branch was created on 1 July 1962 and redesignated the MI Branch in 1967. In April 1967 he was on his way to Vietnam for his first tour as an intelligence officer.

It was in Vietnam, working for the MACV J2, Brig. Gen. Phillip Davidson, that his real education began. Stewart called Davidson a “brilliant and caring man,” who had a long association with military intelligence stretching back to the Korean War when he had manned a desk in Charles Willoughby’s Far East Command G2, on Gen. Douglas MacArthur’s staff. His extensive experience had imbued in him a strong professional belief in the dictum of Francis Bacon that “Knowledge is Power.” Stewart said “General Davidson probably taught me more about intelligence than any single individual.” He learned from Davidson that only through a deep knowledge of the enemy and his methods could an intelligence officer inform his boss in such a way as to effect the outcome of a campaign.²

Back in D.C. in June 1968 he entered the master’s program in International Relations at Johns Hopkins University and also studied Spanish at the Defense Language Institute. After earning his M.A., he continued his studies in Mexico and at the Armed Forces Staff College in Norfolk, Virginia. He returned to Vietnam for his second tour, this time as a major and a senior intelligence analyst.

American involvement in Vietnam steadily increased as the instability of the South Vietnamese government led to greater possibilities of a Communist insurgent victory in the South. Escalating from a small advisory role in 1961, the U.S. committed air power and ground forces in 1965. While the military fought on the often ill-defined battlefields of Vietnam, the politicians found themselves faced with growing anti-war sentiment at home. Army intelligence would be asked to contribute its know-how on both fronts until the withdrawal of U.S. forces in 1973. Following the peace agreement in January 1973, the last intelligence unit pulled out by March, ending for them what had been a mixed experience.

The unpopularity of the war gave rise to the myth that the Army was “managing” its intelligence in relation to enemy strength figures, keeping the numbers low so that the war would not be seen in defeatist terms by politicians back in Washington. The myth was fueled by some Army officers and a CIA analyst named Sam Adams, whose own calculations arrived at much higher numbers. The problem lay in interpretation. If you counted irregular forces who were sympathizers to the Communist cause and would be expected to provide logistic and service support from time to time, but were unarmed and not

part of a trained fighting organization, the numbers would be high. However, if you discounted these Self Defense and Secret Self Defense forces, as MACV J-2 did in their monthly Order of Battle Summary, because they did not consider them to constitute a significant threat to allied combat forces, the numbers would be lower.

Army intelligence received another undeserved blow when the press criticized it for failing to warn of the Tet Offensive when in fact intelligence correctly predicted the attack to the day and pinpointed what forces would be involved. If intelligence was to be faulted, it would only be for failing to appreciate the scale of the Tet Offensive.

The controversy over intelligence estimates of enemy strength and the Adams viewpoint that U.S. leaders, particularly Gen. William C. Westmoreland, were suppressing the numbers of enemy effective forces became the theme of a CBS documentary entitled "The Uncounted Enemy: A Vietnam Deception." Westmoreland found CBS's disregard for the truth so reckless that he demanded an apology and, when he did not get one, filed a lawsuit in September 1982. After more than four months of testimony, the case was settled by mutual agreement in early 1985. One of the people³ to go to New York in the fall of 1984 to testify on behalf of the former commander of US forces in Vietnam was John Stewart. He had seen the piece on television and found it "silly." He said the CBS logic seemed to "be that it was in General Westmoreland's interest to get more American troops over there, and have more Americans killed." Since Stewart was one of the estimators and responsible for the information that his senior officers accepted and counted upon, he felt that he had a duty to testify. He gave a deposition to both sides in the suit, relying on his good memory for figures. He remembered that "when you actually do the original analysis you kind of never forget it."⁴ On the stand he said the Self Defense and Secret Self-Defense Forces that Adams claimed were omitted in MACV Order of Battle numbers was "little more than a motley crew" and not a significant fighting force. He proved to be a formidable witness, thwarting the lawyers' attempts to trip him up with the numbers game. When the lead lawyer for CBS tried to pin him down on the numbers of the "insignificant" force, he replied: "You'll get me to say an approximate figure, Mr. Boies, and then hoist me on my own petard. The answer is, I don't recall."⁵

Like so many other young officers in Vietnam, the experience would caseharden his beliefs in professionalism and determine him to avoid the mistakes of this war. Stewart, and officers like him, would ask themselves what went wrong. The result of their deliberations was a vastly

different army in three decades' time.

Following the Vietnam war, he had a number of MI assignments and commands, first commanding the 109th MI Battalion and then as the G2 for the 9th Infantry Division at Fort Lewis, Washington.

The Yom Kippur War of 1973 offered up its lessons about the importance of intelligence and electronic warfare and made it clear that changes were needed in the U.S. Army. A board was convened and named for its chairman, Maj. Gen. Joseph J. Ursano. The Ursano Board announced its recommendations in 1975, among which was the reorganization of the fragmented commands, like the super-secret Army Security Agency, all doing intelligence-related work, into a tactical battalion called combat electronic warfare and intelligence, or CEWI battalion. Intelligence units were no longer stovepiped directly to the ACofS for Intelligence in Washington, but now belonged to the combat commander to whom they were assigned. They were tools of the warfighter rather than a closed bureaucracy. The first CEWI battalion, the 522d MI, appeared on the Army's rolls in October 1976. Other units followed until the entire tactical force was served by CEWI units in 1983.

As a colonel, Stewart took the reigns of the 525th MI Brigade and became the G2 for the XVIII Airborne Corps from 1983 to 1985. One Sunday morning he was called in the XVIII headquarters. It was all done very discreetly. He was told to wear civilian clothes so as not to give the impression that something was going on. There was always something going on at Fort Bragg, since the XVIII Corps, and its lead punch, the 82d Airborne Division, were the nation's quick reaction force. They were the first to get the call in times of emergency. On this Sunday morning, Stewart did not know what to expect. It was the day after the U.S. Marine barracks had been bombed in Lebanon. He was told that they were going into Grenada. "Spain?" he thought to himself. "We're going to invade Spain?"⁶

If his sense of geography was slightly askew, so too was that of most Americans who had no idea where this island of Grenada was or what kind of political turmoil it faced. Operation URGENT FURY, the code name for the U.S. invasion of politically torn Grenada, involved Joint Task Force 120, commanded by Vice Admiral Joseph Metcalf III. Army Major General H. Norman Schwarzkopf was his deputy. The island of Grenada had been divided into two zones of responsibility, the northern part to be occupied by the Navy and Marines, and the southern portion belonging to the Army and Air Force. Navy SEALs landed on 24 October 1983 at 2200 hours on the northeast coast to reconnoiter what would be Ma-

rine landing beaches. On the southern tip of the island, an Air Force AC-130 Spectre, armed with infrared sensors and low-light TV cameras was taking a look at the Point Salines airfield in preparation for the 1st and 2d battalions of the 75th Rangers to jump in.

The Marines landed on 25 October, took the defenders by surprise, and secured the Pearls airport by 0630. The Rangers encountered stiffer resistance from Cuban forces, but by mid-morning of the 25th the runway at Port Salines was open and the lead elements of the 82d Airborne Division began arriving at 1405 hours. The U.S. citizens attending medical schools on the island were rescued, the dictator General Austin and his bodyguards were taken into custody, and the island was cleared of all resistance by D+5. Eleven soldiers, three Marines and four Navy SEALs died in Operation URGENT FURY and 116 U.S. personnel were wounded. The loss of Grenada was a severe setback for Cuban prestige and a signal that U.S. interests in the Caribbean would be upheld by force, if necessary. Most of the 82d Airborne was withdrawn in November and all U.S. combat forces were out by December.

Stewart's 525th Military Intelligence Group of the XVIII Airborne Corps supported the 82d Airborne Division with tactical intelligence collected and produced in its Intelligence Operations Center. After being informed of the mission on that Sunday morning, he developed a force list that included "a minimum amount of SIGINT, but a lot of HUMINT, counterintelligence, and some technical intelligence capability that we didn't have organic to the 525th MI group."⁷ He learned from this mission a lesson that would become important in the years to come when he was called upon to develop military intelligence doctrine, and that was that an MI brigade could be tailored to fit a specific mission.⁸ The 519th MI Battalion (Tactical Exploitation) with its interrogators, counterintelligence and signals intelligence people joined with the 319th MI Battalion (Operations) and its analysis and production capabilities to form Task Force 525, with command and control coming from the headquarters of the 525th MI Group. Marine and Air Force personnel were also assigned to give the Task Force a joint flavor. The work was centralized in the combined intelligence operations center which managed the mission, ran a technical control and analysis element combined with a corps tactical operations center with its special intelligence element, an automation section and the document exploitation center. It was a windfall for military intelligence as tons of captured documents gave important information about Cuban and Soviet intelligence activities in the Western hemisphere. Captured Soviet-manufactured military

equipment kept technical intelligence specialists busy. All of the group's primary missions were met within the first 48 hours of the operation.

After the combat phase of the operation, the intelligence mission shifted to the countersubversion phase which had the threefold objective of identifying and locating members of the clique that was responsible for the 19 October massacre of Prime Minister Bishop and six others; preventing the reemergence of the People's Revolutionary Army; and, finally, to find all the Cubans on the island.

In phase III the aim was to return stability to the island and the unit's counterintelligence agents took over, assisting the Caribbean Peacekeeping Force in maintaining security and helping the government establish information sources. In all three phases, the intelligence network worked closely with the psychological operations/civil affairs elements to promote stability and establish information programs and reconstruction assistance.

Did MI's tactical CEWI units meet the test of the URGENT FURY operations? According to the commander of the 525th MI Group, "CEWI works." Stewart found intelligence and electronic warfare units under his command to be responsive to the tactical commander and the CEWI concept he thought was validated. He wrote:

Elements of the 525th MI Group deployed on 27 October 1983, and provided a multidiscipline intelligence collection task force trained to operate in a tactical environment. The ability to deploy on short notice and to quickly transition from peace to war are functions of unit training and soldier readiness. That, in combination with a technical background in human intelligence and SIGINT operations, enabled the corps CEWI group to reinforce the 82d Airborne Division early with human intelligence collection. Grenada illustrated the immediate requirement for corps-level intelligence support to division in any major operation. The flexibility inherent in the CEWI organization, along with its all-source capability, allowed for support both up and down the chain of command.⁹

The Spanish-speaking Stewart was appointed director of Intelligence, J2, U.S. Southern Command, Panama, in July 1985, a position he would hold until 1989. He oversaw all U.S. Army intelligence operations in the area, planning and executing operations directed at drug traffickers. It was his operational plan that led to the successful intelligence support to Operation JUST CAUSE.

In late 1989 MI would have another test of its ability to support the combat commander when President George Bush decided intervention in Panama was necessary to stop the drug trafficking of Panamanian dictator Manuel Noriega.

Operation JUST CAUSE, 20 December 1989 to 31 January 1990, depended on meticulous planning, rapid force projection, the element of surprise, and a versatile, professional joint force. On D-Day simultaneous attacks took place across the isthmus of Panama. Nine separate task forces each were given specific objectives, which were largely accomplished during the first day of the operation. On D+1 the Panama Canal was reopened to traffic, the Marriott Hotel was taken and hostages there protected, and Task Force Bayonet began civil-military operations in Panama City to handle the growing flow of refugees. On the second day the Panamanian Police Force was formed and the U.S. Army began civil-military operations in earnest. Penonome Prison was surrendered without a fight and mopping-up of hold-out Panamanian Defense Forces began. Joint patrolling was undertaken with the Panamanians. Dictator Manuel Noriega, after taking sanctuary in the Vatican embassy, surrendered to U.S. forces on 3 January.

Intelligence support for military operations was provided by the 470th MI Brigade stationed in Panama and its 29th MI Battalion, along with the intelligence assets of the organizations making up the joint task force. MI doctrine proved itself flexible enough to support contingency operations like JUST CAUSE. One participant credited a large part of the U.S. Army's success in Operation JUST CAUSE to Intelligence Preparation of the Battlefield. His experience with the force projection operations in Grenada enabled him to sharpen the planning for JUST CAUSE.¹⁰ The intelligence aspects of the operation clicked and Stewart felt that Army intelligence doctrine and organization were on the right track.

He wrote an article for the January 1988 issue of *Military Review* that examined how military intelligence assets could be best tailored for low intensity conflict. In it he recommended some guidelines that would have a great deal to do with shaping future official doctrine and architecture for military intelligence. The scenarios he explored recognized that the MI organization must be flexible and tailored for specific missions. He also saw that new technology must be harnessed to improve collection capabilities, and that it had to be easy to maintain and operate, as well as be compatible with other services and the equipment of the host nation.

The article, as well as other pieces and studies he authored, marked him as one of the Army's thinkers, a trait shared with U.S. Army intelligence leaders over the past 200 years, and one born out of that compelling urge to transmit what they had learned over experience-charged careers, an almost messianic calling to spread the word of intelligence criticality.

In August 1989 he was named as Commanding General, U.S. Army Intelligence Agency, and Assistant Deputy Chief of Staff for Intelligence, Department of the Army, in Washington. The Army Intelligence Agency was organized in 1985 as the field operating agency for ACSI, coordinating all intelligence production. It picked up remaining pieces of intelligence production that had been assigned to the Army Materiel Command and the Office of the Surgeon General.¹¹ In this assignment, he was able to pursue his goal of making Army intelligence responsive to the combat commander, a priority he had learned in Vietnam from Phillip Davidson and one to which he would come back time and time again.

On 1 July 1987, the Military Intelligence Corps was established as part of the U.S. Army's regimental system. Maj. Gen. Julius Parker, then the Commanding General of the U.S. Army Intelligence Center and School, became its first head and he chose for the motto of the Corps "Always Out Front," or in its Gallic form, "Toujours En Avant." From a historical point of view, it was an ironic choice of words, for the intelligence craft in the U.S. Army had never been out front. It had been relegated to a decidedly secondary role throughout its history, until it proved itself in World War II and more so in Vietnam. The new motto of the MI Corps was more than positive thinking. It was a reflection of a new spirit of self-confidence that had been growing along with doctrine and technology. Now the corps and its motto would be put to the test.

On 2 August 1990, Iraq invaded its oil-rich and defenseless neighbor Kuwait. The United Nations Security Council condemned the attack and four days later invoked economic sanctions against Iraq. Operation DESERT SHIELD officially began on 7 August and by 9 November President George Bush was announcing that as many as 400,000 U.S. troops were slated to be deployed to the Persian Gulf. The U.N. resolved on 29 November to use "all necessary means" to oust Iraqi forces from Kuwait and gave them a deadline of 15 January 1991 to do so. Three days before the deadline, the U.S. Congress granted President Bush the authority to employ military force. The day after the deadline for Iraqi withdrawal passed, on 16 January, the U.S. and coalition forces launched a massive air strike against strategic targets in Kuwait and Iraq that opened the DESERT STORM phase of the operation. The ground attack began on 24 February. One hundred hours later, on 28 February, Iraq agreed to a temporary cease-fire and it became permanent on 3 March when they accepted conditions for a permanent end to the shooting. A key to the quick and overwhelming victory was the intelligence effort.

The first trial facing the intelligence leadership was getting their assets into the theater, not an easy task given the scale of Operation DESERT SHIELD, and the competition for strained logistical resources. The intelligence infrastructure would literally go from zero to a fully operational, Army-sized, support group in just a few months. In the words of Stewart, “we virtually had to build intelligence from scratch.”¹² It was during this buildup phase that the most far-reaching and effective military intelligence apparatus to ever be assembled was put in place.

And what a place. It was inserted into an environment far different from the terrain with which the European-oriented U.S. Army was familiar. The buildup period would set the stage for the combat operations that followed. Here is how that buildup unfolded.

The CENTCOM J2 was Brig. Gen. John Leide who deployed to the theater on 7 August with a staff of less than ten. His organization was only a shell, intended to expand in an emergency. He would depend mainly on the ARCENT component of the intelligence team, led by the Army Forces Central Command (ARCENT, or Third U.S. Army) G2. At the height of the war, the number of intelligence staff reporting to CENTCOM J2 totaled almost 700.¹³

When the crisis began, Brig. Gen. Stewart was the commander of the Army Intelligence Agency, and the assistant deputy chief of staff for intelligence on the Army staff in the Pentagon. In that job he had a key role in monitoring the building intelligence picture of the situation in the Persian Gulf. The Army’s Intelligence and Threat Analysis Center produced templates showing every Iraqi division in and around Kuwait on 1:50,000 scale maps. They depicted Iraqi obstacle defenses, tanks, armored vehicles, artillery tubes, vehicles, command posts, and supply dumps, and were updated daily right up to the end of the war. He augmented the newly formed DOD Joint Intelligence Center with Army analysts from his own Intelligence and Threat Analysis Center.

About the work of AIA throughout the crisis, Stewart found much to praise. “In DESERT STORM, tactical intelligence mainly came from above, because tactical units were held back at depths which exceeded their organic assets’ capabilities for collection. And until units closed with the enemy, that is how it was. It was imperative that national collection and departmental production (read AIA) focus on tactical intelligence. AIA provided key support to ground units deploying. They produced an unclassified “How They Fight” pamphlet, templates of enemy divisional defensive positions on 1:50,000 maps, and a multiple volume encyclopedia of the Iraqi threat, which included order of battle, tactics, weapon systems,

medical intelligence, and chemical and biological warfare capabilities.”¹⁴

In late December, the Army’s Chief of Staff, Gen. Carl Vuono, personally ordered Stewart to Saudi Arabia to be the ARCENT G2 supporting the ground forces. According to Brig. Gen. Robert H. Scales, Jr., the war’s most comprehensive historian, “Stewart was clearly the right man for the job. He was dedicated to supporting the tactical commander, and he took over a staff that was doubling in size even as it shifted to offensive planning.” Asked what the leadership challenge was at this point in the campaign, Stewart said that it was “to instill a sense of immediate urgency in the entire G2 staff. We did that, but not without concern and a little pain.”¹⁵

The MI force structure eventually consisted of the 513th MI Brigade acting as the echelons-above-corps intelligence center, or EACIC, for the ARCENT G2; the 525th MI Brigade serving the XVIII Airborne Corps; and the 207th MI Brigade collecting intelligence for the VII Corps. Then there were seven MI battalions, each one performing work for a division. In the desert, over 90 percent of the battalion S2 positions were filled by captains. Female soldiers filled a number of key intelligence positions and performed well. Stewart found that “over the last ten years, MI came to emphasize tactical proficiency, doctrine, and training. Recently, the Army placed priority on quality and maturity for combat battalion S2 positions. The years of developing doctrine, techniques, and procedures, and, most importantly, well prepared people, paid off clearly in the Gulf.”¹⁶

When the U.S. Army Central Command in Saudi Arabia was handed an offensive mission by President Bush and his defense team, the small ARCENT G2 section had to expand to support two Army corps instead of one. The office was doubled in size and the intelligence staff sections were folded into the intelligence center operated by the 513th MI Brigade. It was a busy time, as General Stewart later related. “We were just building the intelligence team at ARCENT level during the December-January period, at the very time when the corps demanded increasing volumes and levels of intelligence detail. By early February, we could respond to corps needs. Then, the ARCENT G2 led theater Army intelligence and became a full member of CENTCOM’s joint intelligence team. The start-up in January was rocky, but we moved quickly to develop an intrinsic field army intelligence capability.”¹⁷

Because of the requirement for a rapid buildup of large numbers of troops in the theater, the combat units were sent in first, followed by their supporting units. So in the first months of the crisis, the troops on the ground were

blinded by the lack of their own tactical intelligence units which arrived over the next five months. Assigned to XVIII Airborne Corps, the 15th MI Battalion did not arrive until mid-October to provide the Army's only aerial collection. It was standing in for the airborne corps' own 224th MI Battalion which was still on counterdrug operations. As the nation's contingency force, the XVIII Corps was equipped with the Tactical Exploitation of National Capabilities (TENCAP) Imagery Exploitation System which could pull in strategic intelligence via satellite. Neither ARCENT nor VII Corps had this capability.

To reinforce INSCOM signals intelligence in the theater, the 204th MI Battalion was deployed from Europe. The VII Corps brought its 207th MI Brigade, but it had to rely on pulling intelligence from higher echelons, or from its sister corps, because it was not configured for contingency operations.

Tactical intelligence, or information on the specific enemy formations expected to be engaged, was produced at Corps level and below. It flowed upward from battalion, brigade, division and corps "2" shops, eventually coming together at the 513th MI Brigade, a unit under the operational control of ARCENT, where it was fused with strategic intelligence pulled down from national levels of intelligence gathering. This information was intended to give the theater commander a broad overview of the developing situation. The planning for the now famous "left hook" or flanking movement was aided by terrain analyses and Iraqi Order of Battle information supplied by the 513th MI Brigade.¹⁸ The Foreign Materiel Intelligence Battalion of the 513th MI Brigade was kept busy exploiting an unprecedented windfall of captured equipment. They were assisted by members of the U.S. Army Foreign Science and Technology Center. Upon its return to the U.S. after Desert Storm, the 513th would relocate to Fort Gordon, GA, where it would collocate with a new Regional SIGINT Operations Center.

In mid-January ARCENT's Joint Imagery Processing Center came on line and waded into the increasing sheafs of imagery being produced by the U-2 and RF-4C aircraft, now that the air campaign was underway. Despite the admirable efforts to rush the means of disseminating imagery intelligence to the field, it was a case of too little too late, and most of the mountain of imagery was moved by old fashioned courier. "Throughout January and February, daily couriers carried 200 pounds of annotated photos, maps overprinted with Iraqi templates, and other intelligence documents, moving 27 tons of material from one end of the theater to the other."¹⁹

The commander in the field had much more technol-

ogy to deploy and many more decisions to make than any of his predecessors in history. But with all the added complexities, he had little tactical information to go on, either because his organic intelligence units had not yet become operational in the theater, or if they had deployed they were positioned far to the rear to avoid tipping off the enemy of allied intentions. It was not until 19 January when the intelligence units moved into to their forward positions that they could begin to work on those enemy units to their front. The strategic intelligence collected by national-level agencies was of little use to the commander, except in those cases where imagery located enemy emplacements to his front. The Defense Intelligence Agency was not staffed or trained to provide the kind of tactical intelligence a field commander needs. The Army's historian of the conflict cited an example of a civilian national analyst who saw Iraqi troops movements as training maneuvers while an experienced Army officer "familiar with the last-minute starts and stops of tactical maneuver saw the moves as a final shift to attack positions."²⁰ The DIA formed support teams at the various corps and ARCENT to access the national military intelligence data and imagery base.

During the buildup phase of DESERT SHIELD, a multitude of assets were marshalled, many of which had never been seen on a battlefield before. Some of the technology was so new that it underwent its first operational tests under the rigors of actual combat. Some pieces of equipment arrived in the theater along with the civilian contractors who developed it so that they could train soldiers on its use. The following paragraphs look briefly at the tools the intelligence soldier had at hand for this war.

For the first time, new intelligence communications and computer systems were deployed which enabled intelligence, including spot imagery, to be disseminated from national to tactical levels. The computer was truly the *Deus ex machina* of information-age warfare. William Friedman had pioneered the use of computers in their primitive form in the area of cryptology just before World War II, and the intelligence community made ample use of them during the Vietnam War and after, but their real power manifested itself during the Gulf War, controlling machines, guiding munitions, enabling communications links, and manipulating vast data banks.

High above the cradle of land between the Tigris and Euphrates Rivers in February 1991 was amassed the most impressive array of intelligence-gathering esoterica ever assembled in one place. It was as if civilization, now in the prime of life, had returned to its birthplace to show off what it had learned over the intervening years.

The intelligence arsenal was not only hovering dome-

like over the nation of Iraq, but encircling it on the ground. It contained a little galaxy of satellites like the Keyhole, which was said to be able to see things as small as a compact disc, or the cloud-piercing Lacrosse designed to keep its eye on the movements of the Warsaw Pact forces. In addition to the picture-taking satellites, there were the listening kind, like the Magnum and Vortex.

In the earth's atmosphere cruised 23 different kinds of aircraft, adding their imagery, electronic and eavesdropping capabilities to the fray. The U2s alone took more than one million feet of film. Enemy airspace was cross-hatched with allied aircraft, mostly American, bristling with antennae. Rivet Joint and Senior Span platforms locked on enemy communications frequencies. Notably missing was the SR-71 Blackbird which had been mothballed a year earlier. Its loss hampered the aerial recon mission. This aircraft's high-altitude and high-speed allowed it to photograph 30-mile swaths of enemy territory at 2,000 miles per hour and do so outside the range of air defense weapons.

Two prototype systems were hurried into service and proved their worth—the unmanned aerial vehicle (UAV) and the Joint Surveillance Target Attack Radar System (Joint STARS).

The JSTARS was in developmental stages. It consisted of a synthetic aperture radar mounted in an Air Force Boeing 707 that could operate in a targeting mode or as a surveillance system, or in both modes simultaneously. The near-real-time information passed back to air or artillery weapons systems was detailed enough to target attacks while the surveillance field of vision was 25x20 kilometers, large enough to watch movement in the entire Kuwaiti theater of operations. The system allowed the commander to see to a depth of 150 kilometers in all kinds of weather.

The system had performed so well in a operational field demonstration in Germany in the fall of 1990, that Army and Air Force program managers felt it was ready to be deployed to the crisis in the Gulf. A briefing team went to Saudi Arabia in December 1990 and convinced Gen. Schwarzkopf of its value. He quickly approved the deployment of the JSTARS and directed that it be in operation by 15 January.

A JSTARS package was deployed to Saudi Arabia in mid-January. It consisted of two E-8A aircraft (specially modified Boeing 707s), and six ground station modules. Each ground station was manned by a sergeant and two specialists. They were located at CENTAF Tactical Air Command Center, ARCENT Main, ARCENT Forward, XVIII Corps, VII Corps, and with the Marine headquarters. Special modifications were made to the two aircraft

to enhance datalink connectivity to the Riyadh-based headquarters. Self-defense systems were added to the planes to increase their survivability in the event air superiority was not achieved. The range of the JSTARS was also doubled for the Gulf War deployment. The JSTARS increased the limited coverage that was provided by Side-Looking Airborne Radar (SLAR) missions flown by the Mohawk battalions assigned to VII and XVIII Corps.

The operational concept for the JSTARS was to provide 24-hour support to a U.S. Army corps. Using its moving target indicator (MTI), its primary mode, it would “continually sweep the corps commander’s area of interest and detect, locate, and display moving targets from individual vehicles to brigade or larger-sized units. The radar would revisit the area rapidly enough to cohesively track these elements and provide location accuracies sufficient for targeting for Army and Air Force weapons systems.”²¹ When more information was required on specific fixed targets, the system could go into its imaging mode using its synthetic aperture radar (SAR).

On one occasion when B-52s arrived on station and cloud cover prevented them from finding targets, the CENTCOM Air Force commander, Lt. Gen. Charles A. Horner, turned to JSTARS. Pfc. Timothy Reagan on duty in the ground station pointed out an Iraqi convoy that he had on his screen and Horner directed the air strike against it, destroying the convoy and demonstrating the value of both JSTARS and its operators.²²

When the ground war began, JSTARS provided the ARCENT G2 the capability of tracking all Iraqi movements and determine what their plan of action was. These situational assessments were extremely important to the corps commanders who could readjust their attack plans at various points in the decision-making process.

The after-action report found that “Joint STARS was the single most valuable intelligence and targeting collection system in DESERT STORM. Joint STARS contributed to every “key read” during the ground war. It showed the lack of enemy movement just before the attack. It gave the first and continuous signs of Iraqi withdrawal from Kuwait and was the target development instrument we used for the air attack on fleeing Iraqi convoys on the main road north of Al Jahra. Joint STARS showed the Republican Guards heavy divisions establishing their defense of Basrah. Although, there was other intelligence on all of this, Joint STARS was absolutely instrumental.” Addressing the question of whether JSTARS tool was best used for targeting or to read situational developments, the analysts concluded “Joint STARS provided a full view of the enemy situation. It told us whether or not enemy units were moving, and if so, in what strength.

Then it allowed us to select the key targets (like units moving to blocking positions in the path of the main attack) for attack. Since we cannot always attack all targets, the situational development function is crucial to target selection.”²³

To give the commander a better close-in picture, the Pioneer Unmanned Aerial Vehicles (UAV) were called upon. There were six Pioneer UAV systems deployed to Operation DESERT STORM—One each on the battleships Wisconsin and Missouri, three with the Marine Corps, and one system deployed with an Army task force. The latter was a 36-man platoon of five UAVs sent from Fort Huachuca on 10 January. It arrived in the theater on 26 January and launched its first mission on 1 February in the VII Corps. The soldiers from Company E, 304th MI Battalion, 111th MI Brigade, operated a 400-pound, prop-driven airplane mounted with a television camera that was capable of day or night monitoring of the battlefield. The UAV had two ground pilots, one to make takeoffs and landings and another to fly it down range. It had a payload operator to monitor the onboard camera, a mechanic to perform maintenance, and an electronic technician. The Pioneer, with its 100-mile range, 24-hour capability, and near-real-time data link, could provide targeting information and act in a reconnaissance role.

The 207th MI Brigade, the intelligence collection arm of the VII U.S. Corps commanded by Col. John Smith, got their Pioneer on 29 January. Within two days of receiving their UAV, the brigade was flying targeting and acquisition missions that located Iraqi artillery. These were the first combat Pioneer flights. The Pioneers also flew missions in support of the Egyptian Corps to the east of VII Corps. Just before G-Day, the 207th formed Task Force Sand Hawk that would push the UAV Platoon out in front of the 1st Cavalry Division sector and provide continuous coverage as the VII Corps moved north. They were protected by a tank platoon from the 77th Armor. Taking off from an aluminum runway, the UAVs flew fifteen missions, totaling 61 flight hours, and they pinpointed a number of enemy positions, including artillery, Free Rocket Over Ground (FROG), and infantry trenches to the front of attacking U.S. forces. They were forced to cancel another 10 missions because of weather. They lost one of the Pioneers in a crash.²⁴ On one occasion, Iraqi troops attempted to surrender to a unmanned aerial vehicle that was taking pictures over their position.²⁵

To solve the problem of connectivity and to provide a means of sending intelligence, including imagery, back and forth, ARCENT built a communications and com-

puter link called DODIIS that provided a direct link with the Army Intelligence Agency. According to Stewart, “This gave us on-line computer access to data bases in AIA and DIA. With DODIIS, we could transmit a relatively high volume of imagery from AIA to ARCENT. Next, we established communications, computer, and imagery links with corps and divisions.”²⁶

There were four satellites conveying intelligence between Washington and the theater during the war. One link connected ARCENT directly to the Army Intelligence Agency. Beginning on 14 August, two satellites (belonging to each the Navy and the Army Space Programs Office) began broadcasting to the XVII TENCAP system at Fort Bragg, and from there to the field using new terminals and TENCAP-compatible radios. The VII Corps received its imagery from the XVIII Corps tactical terminals. A fourth satellite link, using the TROJAN satellite system, was set up by a team from the Intelligence Center at Fort Huachuca. It was designed to send electronic mail, faxes, and voice messages to the forward divisions and corps.

TROJAN SPIRIT, a satellite that transmitted secure voice and digital imagery to trailer-mounted terminals, was another system that was rushed to the battlefield from the testing labs. It arrived in February, and a team from ARCENT G2 configured and fielded 12 trailer-mounted terminals, and, along with civilian contractors, trained its operators. General Stewart explained how it was deployed. “With outside help, we deployed TROJAN (for digital and secure voice satellite communications) to corps and divisions, and Army Space Program Office-Secondary Imagery Dissemination System (ASPO-SIDS) (for imagery receive capability) to VII Corps and its divisions. XVIII Airborne Corps used its Tactical Exploitation of National Capabilities (TENCAP) Tactical High Mobility Terminals and other systems to link with downlinks at Fort Bragg for its digital imagery support. This communications system connected Army tactical commanders from remote areas in Saudi Arabia and Iraq with ARCENT and AIA in Riyadh and Washington, respectively.”²⁷

With the early lack of tactical intelligence in the theater, and a dependence on national sources, many commanders turned to their own reconnaissance resources. The 101st Airborne Division used their AH-64 Apache attack helicopters to fly over front lines to see what division was up against. One pilot said, “We flew these missions deeper and deeper into Iraq, sometimes as far as 120 kilometers from the border. The purpose was to locate and catalogue Iraqi outposts along the anticipated route of advance and for future use in targeting. This seemed to be our division commander’s best if not only

accurate and timely source of ‘what-is-out-in-front-of-me’ intelligence.”²⁸

The 1st Infantry Division used its Apaches to fly deep into Iraqi territory, radioing back enemy locations and taking video pictures, enhanced by infrared collectors. Briefed by the battalion S2 on division intelligence priorities, the pilots were able to note enemy activity and movements. One participant wrote that a single videotape “revealed the location of 19 enemy positions, including soldiers and equipment such as tanks, BMPs [an infantry fighting vehicle of Russian design], and anti-aircraft equipment bunkers.”²⁹

A high-profile job for Army intelligence was locating the Scud launchers that played such havoc with the coalition. The long-range, high-frequency signals used to control the Scud missiles were vulnerable to jamming by the TLQ-17 Sandcrab, manned by a platoon from the 201st MI Battalion. The jamming forced the Iraqis to resort to less secure communications which could be intercepted. But the effort expended to direct intelligence assets at the Scud sites slowed the targeting missions for the ground war.

The Sandcrab jammer was positioned in northern Saudi Arabia, with its 5,000 watts of power and a massive transmitter. It was ready to go to work jamming enemy transmissions, raising the old electronic warfare debate of whether it was better to forego jamming in favor of intercepting the enemy signals. A compromise was reached whereby Sandcrab jammed only the encoded beginnings of Iraqi transmissions, causing the enemy to become confused and send in the clear.³⁰

The Iraqi COMSEC would have to be rated as good however, but this was achieved by not talking on the radio at all or using secure land lines that had not been severed by the bombing, a measure that crippled the ability of units to communicate readily. By staying off the radio, the Iraqis degraded much of their own command and control capabilities. Despite their prolonged silence, just before the ground war allied intelligence targeted for destruction what were believed to be signal nodes, but left four intact in the hopes that the enemy would resume radio contact in the heat of battle. And they did, leading to valuable NSA intercepts which, in conjunction with JSTARS, brought into view a vivid picture of their movements and intentions.

The first priorities were building trust with the corps and division commanders who felt, like General Franks, that they were not getting the intelligence, especially imagery, that they needed. There was also the problem of augmenting intelligence staffs with enough linguists.

Another new job facing the intelligence community

was shifting the intelligence product down the chain of command to the people on the ground fighting the war. Traditionally, intelligence officers at higher headquarters concentrated on informing their bosses, the generals. Now they would have to get the word down to the captains, lieutenants and sergeants who needed it most urgently.³¹

Gen. Stewart's G2 shop had two concerns during the air phase of the war. First, it had to develop targets for the ARCENT and CENTCOM; then it had to assess the battle damage to those targets in the Kuwaiti Theater of Operations. A target development and validation planning cycle was set up, with planning taking place four days in advance in order to get direct imagery, signals collection, and a good description of the target before adding it to the list. Early on, when priorities shifted due to operational necessity, the G2 targeteers found themselves out of sync with CENTCOM and CENTAF. But as a larger data base of targets was developed, more flexibility was built into the process.

The development effort employed the national collection systems, the theater U-2 and RF-4C Phantom II reconnaissance aircraft, JSTARS, corps aerial exploitation battalions, and the airborne radars against a host of possible key targets like command and control facilities, artillery, armored formations and logistics bases. Enemy deserters were also questioned about targets. A priority list was developed by the ARCENT G2 and revalidated right up until they were attacked. Eventually, the G2 targeteers processed and validated targets within an 18-hour window 70 percent of the time.³² A second problem was the lack of imagery, especially early in the operation when Iraqi missile air defense was a threat to the aircraft taking the pictures. But as coalition forces gained air superiority, more imagery missions were scheduled and the added high resolution photography pinpointed the targets for deadly accurate air strikes. One finding of the Congressional Oversight Committee noted that "from among millions of structures within Iraq, the intelligence agencies pinpointed hundreds of military significance with few, if any, errors."³³

ARCENT G2 was charged with battle damage assessment because the ground campaign starting time was dependent on the reduction of Iraqi armor and artillery by 50 percent and that call had to be made by the Army before Army forces were committed. The question of just how degraded the enemy units actually were would be a point of contention between the military on the ground in the theater who were able to factor in gun camera footage, defector reports and other close-in sources of intelligence, and the more cautious CIA which relied mainly on satellite pictures. From the point of view of the ground

commander, it was better to err on the side of lower damage than be surprised by an enemy stronger than expected.

With as many as 3,000 sorties per day, BDA was a tough picture to bring into focus. There were subjective factors like the characteristically optimistic pilots' reports, sometimes called "ego BDAs," and natural obstacles like cloud cover and imprecise wide-angle photos. To arrive at some kind of consistent baseline, different formulas were used and then discarded if they proved flawed.

After the war, General Stewart reflected on the vagaries of BDA. "BDA would be easy if every time an air mission struck a target it was immediately imaged. It does not happen that way. Bad weather, enemy air defense, competition for imagery elsewhere, and numerous other factors absolutely preclude following a strike mission with imagery. In fact, imagery taken on targets struck usually lagged by days, not hours. In that time the enemy usually moved, replaced his losses, or took other steps to befuddle the BDA analyst. Moreover, even the best imagery analyst with clear overhead photography often has a hard time telling which tanks are broken and which are not."³⁴ Then there was the problem of scope. He remembered that "we had approximately 1,000 to 5,000 sorties a day going after anywhere from 400 to 800 targets. You were not going to have immediate photographic coverage just as the target was struck."

Given those uncertainties, Stewart had to come up with a consistent formula for determining his assessments. He said, "We counted two factors: Armored vehicles (tanks, mainly) and artillery. We used A-10 pilot reports, aircraft videos, and high resolution imagery. We counted one third of the pilot reports that labeled targets as destroyed, one half of the aircraft videos, and all reports of destruction from imagery. We used A-10 reports because A-10s usually fly in tandem and loiter longer, and A-10 pilots train in the close air support role. Because of weather, altitude, and air defense, we factored in error. Aircraft videos worked well, but we deleted half of the apparent kills because subsequent imagery generally confirmed only about that amount destroyed."³⁵

He assigned his highest confidence to high-resolution U2 photos, gave a 50 percent weight to the F-111 and F-15E gun-camera footage, and reduced A-10 pilot reports to one-third. SIGINT was of little use since the Iraqis were all but off the air. He proofed his resulting figures by concentrating a second time on a few enemy units and comparing the results with his initial estimates. If they were the same, he could confirm that his formula was consistent. Stewart had to justify his methods and his assessments to Defense Secretary Richard Cheney and JCS Chairman Gen. Colin Powell on 9 February when

those officials spent a day in Riyadh being briefed by Gen. Schwarzkopf and his staff.³⁶

The issue became an emotional one, with national agencies challenging the numbers arrived at in the theater. Stewart explained that “On one hand, the Air Force believed our BDA was too conservative. On the other hand, national intelligence agencies, using national imagery largely, claimed our BDA was too liberal. They estimated enemy strengths at 80 to 90 percent a few days before G-Day, when we assessed them to be approaching 50 percent.” The difference between the theater and national estimates he attributed to operating under a different set of rules and with different tools at hand. “In the final analysis,” he added, “it was academic, because the CINC was in charge. The CINC made his decision based on our estimates and we turned out to be pretty accurate.”³⁷ After the war, Stewart stuck by his BDA figures, saying “No one really liked the ARCENT BDA, but it was the best we had, and as it turned out, it was about right.”³⁸

Responsible for BDA at CENTCOM headquarters was Col. Charles Thomas, an officer Schwarzkopf called “a brilliant, dedicated professional.” He nightly briefed the CINC on BDA. With the war long over, the CENTCOM J2 received a report from the CIA saying that they now agreed with CENTCOM’s estimates of the number of enemy tanks destroyed. According to Schwarzkopf, Brig. Gen. Leide and Col. Thomas had it framed.³⁹

The report of the Congressional Oversight Committee contains an example of an unlikely source of intelligence, but one that illustrates the ingenuity and determination of the intelligence officer. When planning was taking place in CENTCOM for the sweeping movement around the enemy’s left flank, one looming unknown was the trafficability of the terrain, that is, could the desert sand support a succession of heavy vehicles and were the gullies passable. Some of the answers came from a team of intelligence officers who poured for three days through archaeologists’ reports in the Library of Congress. In the journals of these scientists they found detailed information on the country the U.S. forces would be encountering.⁴⁰

Every conflict brings new challenges, and the Gulf War was no exception. As we turn to some of the challenges faced by John Stewart and his supporting cast, keep in mind that they were facing a situation that called for flexible thinking and new depths of ingenuity. In the end, the weaknesses which they identified were far outweighed by the strengths of the intelligence achievement.

The demands on the intelligence infrastructure were

intense. Stewart said, "In DESERT STORM we were doing many things with intelligence at any one given time."⁴¹ Some of the problems Army intelligence faced in that conflict were the lack of Arab linguists, notably those familiar with the Iraqi dialect; a paucity of HUMINT from the closed, tightly supervised Iraqi society; the limited use of radio or radar by the Iraqis to deny SIGINT; and the absence of good maps of the Kuwaiti theater. One of the advantages for the U.S. forces was its familiarity with the Soviet equipment it would encounter, the fruit of years of technical intelligence directed at the Soviet Union.

One solution to the paucity of Arab-speaking linguists, a hard language for Americans to learn, was to use the people from the Utah National Guard's 142d MI Battalion. They were assigned to both the XVIII and VII Corps and to the 513th MI Brigade at field army level. Working as signals intelligence (SIGINT) interceptors and transcribers, interrogators, and interpreters, they provided a clear example of the kind of intelligence capabilities that could be furnished by the MI Reserve Component. A second solution came from Washington. To fill the void of qualified linguists, Lt. Gen. Charles B. Eichelberger, Deputy Chief of Staff for Intelligence, paved the way to recruit and train young Kuwaitis in the United States, most of them attending college, and ship them to the theater as sergeants in the Kuwaiti Army to act as linguists in intelligence units.

Some units, like the 101st Airborne Division, enjoyed good linguist support. The 132 linguists of the 101st were instrumental in debriefing some 400 Kuwaiti refugees before the DESERT STORM phase.

When the threat in the Persian Gulf presented itself, there were not enough up-to-date maps of the right scale in the U.S. Government inventory. The Defense Mapping Agency overcame these initial problems through a laudable effort, but this has always been a chronic problem for U.S. forces since the first time they ventured far from U.S. borders in the 1846 Mexican War. It was one the MI professionals were determined to solve in their future planning.

Another difficulty was the scope of the operations themselves. The land area was large and intelligence had the early mission of enforcing the blockade of Iraq, one that required all air, sea, and ground traffic to be monitored 24 hours a day. As the crisis worsened and military action became a possibility, thousands of targets within Iraq and Kuwait had to be identified and photographed and the deployments and movements of enemy forces had to be plotted. Overhead reconnaissance had to be deployed in a map-making effort for the theater of opera-

tions.

Those weaknesses, as well as strengths, were addressed in a document prepared at the instigation of Stewart following the operation. *Called Operation DESERT STORM, The Military Intelligence Story: A View from the G-2, 3d U.S. Army*, the document gave the MI general a chance to consider the challenges faced by Army intelligence.

...Intelligence collection assets were finite. The enemy limited them even more by only infrequently using their radios. Until just before G-Day, we had very limited HUMINT. Thus, we relied on imagery, which, in turn, was limited by weather and capability shortfalls. We could take wide angle, blurry photos or spot, clear photos. The former severely hampered accuracy. The latter provided clear pictures but muddled our full comprehension of the battlefield. It was like viewing a football game from the Goodyear Blimp with the stadium and city in view and then switching to a linebacker through a high-powered, stationary telescope. There was not much in between.⁴²

One of the lessons of the war, as noted by the G2, was the need for aerial imagery covering a wide area. In the Congressional Oversight report, a senior CENTCOM intelligence official is quoted. "There is a need for wide area synoptic coverage. The area occupied by Iraqi forces was on the order of 27,000 to 30,000 square miles, the size of four New England states. ...In hindsight, getting rid of both the SR-71 (high-altitude photographic reconnaissance aircraft) and (a wide-area satellite imagery system) at the same time was shortsighted. The CINC lacked synoptic coverage." The committee employed its own metaphor for using spot imagery as opposed to wide-angle photography. It was like "searching New York City by looking through a soda straw."⁴³

While the corps commanders had ample reason to expect more, the system simply could not keep pace in the early days. "We had competing requirements, many of them from the corps themselves," Stewart explained. With multiple number-one priorities over an area the size of Montana and with competing requirements from other components and national decision makers, we did not satisfy everyone, all the time. We did, however, focus on the corps and their main efforts." That meant that the G2 section at ARCENT would have to define the needs of the corps. "The system the corps should have used was broken. Of over 400 requests for information (RFIs) we received, only 20 applied to the corps commanders' stated campaign needs. The others were extraneous. Perhaps they held some importance at one time, but they largely fell into the category of academic curiosity. Nev-

ertheless, ARCENT was busily directing limited collection platforms and scarce analytical efforts toward answering these less-than-useful RFI. We changed that by mid-January.”⁴⁴

Before the ground phase of the war began, VII Corps commander, Lt. Gen. Frederick Franks asked John Stewart for up-to-date intelligence for planning purposes to be delivered 24-hours after the VII Corps launched its attack and was about to encounter the enemy’s Republican Guard units. As promised, Stewart delivered the fresh information at the key moment, on the afternoon of 25 February, through the VII Corps G2, John Davidson, the son of his Vietnam War mentor, Phillip Davidson.⁴⁵

The conveyance of intelligence at the precise moment of need to General Franks was not an isolated case, but part of an innovative program put together by ARCENT intelligence officers that was intended to match intelligence collection resources to battle plans, that making up-to-date information available at the time when the commander would have to make one of his critical decisions. Using a football analogy, ARCENT called the program “key reads.” If the CINC was expected to make an important decision at a point in the battle plan based on the enemy’s strength, for instance, to launch a second phase, the ARCENT G2 would assign priority collection resources, along with targeting national assets, just hours beforehand so that the CINC would have the best information on which to act.⁴⁶ Stewart explained, “we developed the IEW Synchronization Matrix. Using backwards planning we looked at what intelligence corps commanders needed and when they needed it, and then planned how to get it to them. The matrix took into account how we would collect, how we would disseminate, and what obstacles we would have to work around.”⁴⁷

Another clear success for intelligence was the establishment of a forward headquarters that could communicate “face-to-face with corps and division commanders and staffs and to solve problems quickly ‘on the ground.’” Named “Lucky TAC” after General George Patton’s World War II forward headquarters of the Third U.S. Army, it “provided an invaluable service.” Stewart said, “Lucky TAC’s G2 operations focused on solving intelligence problems. The ARCENT deputy G2 forward visited the corps personally almost daily to facilitate this. Lucky TAC’s problem solving focus was vital to the success of ARCENT’s IEW operations.”⁴⁸

Imagery piled up in Saudi Arabia by the truckload. By one author’s estimate, “there were 200 tons of intelligence ‘product’” by war’s end. This unprecedented volume caused problems for the hundreds of analysts stretched in a chain from the Joint Imagery Production

Complex at Riyadh Air Base, to CENTCOM's Joint Intelligence Center, to the Pentagon's own JIC, to the National Photographic Interpretation Center in the Navy Yard in D.C. The workload was too overwhelming and the process could not meet the demand for timely answers, especially in the realm of Battlefield Damage Assessment.

Satellite coverage produced vast amounts of photos, but never enough to satisfy tactical commanders who were desperate for detailed photography of targets in their area of responsibility. There were not always processes in place to disseminate satellite imagery at the national level down to the tactical users. An exception was the XVIII Corps which, as the nation's contingency force, had their own satellite transmission capability, the Tactical Exploitation of National Capabilities (TENCAP) Imagery Exploitation System, back at Fort Bragg. The Army force structure had eliminated the aerial exploitation units at division and corps level, choosing to depend on imagery produced at higher levels and transmitted to them via digital bandwidths. The communications systems for this imagery was still in development and not ready for the battlefield. The gap was filled with off-the-shelf software and prototype equipment.

The Congressional Oversight Committee found that one of the major breakdowns in intelligence during the war was the "inability to reliably disseminate intelligence, particularly imagery within the theater." They laid the blame on inoperable hardware. They said that "out of 12 secondary imagery dissemination systems (SIDS) deployed in-theater, only four could communicate with one another." It also noted that the demands made by imagery transmission on the U.S. communications capacity was so great during the operation, that U.S. forces seriously considered leasing time from Soviet communications satellites. It was a option never exercised.⁴⁹

Stewart agreed. He said, "dissemination was the Achilles heel of MI," and elaborated in his postwar reflections.

The normal intelligence digital communications system (AUTODIN) was overloaded, and it stayed that way throughout the operation. Immediate reports arrived in 12 hours. Too many bogus requests for information helped cause that, but there were other reasons. In short, the established communications system could not support intelligence requirements. To answer that, we developed the communications capabilities described below, which worked superbly to division level. Dissemination remained a problem below division.

As we produced hard copy material, we had to develop a courier dissemination system, out-of-hide. Of course, the Army always has done this kind of creative,

innovative work, but if dissemination is a real need, and it appears that it is, we must structure ourselves for it. In the end, we distributed about 200 pounds of products daily during January and February over great distances.

We fielded ASPO-SIDS to help disseminate digital imagery, and that, or something like it, is a partial answer to imagery for tactical commanders. Through it all we never totally solved the dissemination problem. We probably provided too much to some units. We were definitely late at times. But intelligence did arrive, and commanders had it in their hands when they needed it.⁵⁰

What can we say was the final judgment on the functioning of U.S. Army intelligence? Here is what some top leaders have said about overall performance.

The intelligence profession in the U.S. Army had been urging commanders over the entire century to use and respect their product, now, commanders had learned that lesson so thoroughly that they could not get enough of it or as fresh as they wanted it.

The pinching off of the intelligence flow was the source of many complaints from commanders. A brigade commander in the 82d Airborne Division claimed to be in the dark about the Iraqi forces over the next hill. It was only two or three days after the ground offensive started that he was able to get information, and then from the French. Lieut. Gen. Walter Boomer, the senior Marine commander in the theater, was quoted as saying: "I remember being in Vietnam for two tours and never getting a single piece of useful intelligence. It has gotten better, but we still can't get to the company level what they need to do the job."⁵¹

In his postwar book done with writer Tom Clancy, VII Corps commander Lt. Gen. Frederick Franks voiced his frustration with the lack of imagery intelligence of Iraqi positions before the attack. He complained that tourists had better pictures of Iraq than he did and mused aloud to Third Army commander John J. Yeosock that he would be better served by sending his private C-12 aircraft along the border with a cameraman hanging out of the door.⁵² Franks found intelligence at first frustrating because of its lack, and, later when it was provided at key points in the decision-making process, he found it to be of crucial value. When the fighting stopped, the VII Corps commander wrote to Stewart telling him that it "was truly a major league intelligence support and our victory would not have been possible without it. You have my unending personal and professional thanks."⁵³ Franks' experience with intelligence during the Gulf War was typical of the ambivalent feelings that existed about intelligence performance.

The commander of allied forces in the Gulf War, Gen.

H. Norman Schwarzkopf, gave military intelligence top marks during Congressional testimony on 12 June. Overall, he said, “it was excellent. We had very, very good intelligence support. We had terrific people. We had a lot of capabilities.” But he did find areas, like battlefield damage assessment, real-time imagery, interoperability, and overly caveated intelligence estimates, that could use improvement. His experience was incorporated into the findings of the House Armed Services Committee’s report on Intelligence Successes and Failures in Operations DESERT SHIELD/STORM issued on 16 August 1993. The Oversight and Investigations Subcommittee concluded that: “Intelligence collection...was generally very good and deserving of praise. Intelligence distribution overall was very poor, particularly when it came to serving air fighting units. Both the hardware and the people failed. Intelligence analysis was mixed. The concept was brilliant. But the count of dead Iraqi tanks, APCs and artillery pieces exposed a major systemic failure in the ability to accurately make battlefield damage assessment.”⁵⁴

The committee determined that the intelligence agencies “had an excellent handle on the units, locations and equipment of Iraqi troops (but not the numbers of troops) deployed to face coalition forces, despite Iraq’s outstanding communications security and despite the U.S.-imposed ban on overflying Kuwait before the air war began.”⁵⁵

Overall, DESERT STORM could be adjudged as an overwhelming success for U.S. Army intelligence. In addition to the above-stated opinion of the commander of the coalition effort, this conclusion was expressed by a captured Iraqi officer who noted:

We had a great appreciation of your intelligence system; we knew from our experience in the Iranian War that at all times you could see us during day and night and knew where we were on the ground. If we communicated, you could both hear us and target us, and if we talked too long, you would target us and destroy us with your ordnance. On the other hand, as we looked at our intelligence system, we had no idea where you were on the ground, we had no intelligence system capabilities to see what your dispositions were, and we had no way to monitor your communications. We knew you were going to attack only when you overran our front line positions....⁵⁶

Ironically, when talking about his own Army’s lack of sophisticated intelligence, he could have been describing the U.S. Army in the early stages of the Korean War just 40 years earlier.

Stewart’s postwar report zeroed in on ten lessons. Success depended on high quality soldiers and leaders. Army intelligence and electronic warfare needed its own

rugged, reliable and redundant communications systems. A means was needed to deliver real time photography to commanders from Corps through Brigade; the intelligence community also needed to emphasize the requirement for wide area, high-resolution imagery, because commanders were not content with reports incorporating imagery readouts, but wanted hard copy photos. The UAV and JSTARS systems proved their worth and should be funded and fielded as soon as possible. There was a need to balance MI units at Corps and Division with SIGINT as well as HUMINT and IMINT. Doctrinal changes should embrace adopting the IEW Synchronization Plan methodology; changing analysis methodology; interlocking collection and production closely; determining the best place for the Technical Control and Analysis Element; and IEW cross training. The intelligence coming from the theater Army, that is, echelon above corps, played a vital role, sealing the gap between echelons above corps and those below, thus verifying the doctrinal relationship between the G-2 and MI Commander. The EAC Brigade can be a contingency force multiplier, especially when it focuses downward, providing its services to the corps level. Army operations require Army intelligence support. MI Reserve units added little to the effort, (with the obvious exception of the 142d MI Battalion of the Utah National Guard which provided Arab linguists, and the 24th MIBARS from New York) mainly because of a lack of readiness, but individual reservists were important in filling specific gaps in the force.⁵⁷

Much was made by writers after the war of the idea that this was a test for the U.S. military and finally a redemption of all that had been wrong in Vietnam. In many ways it was. There was undoubtedly a professional veneer on the entire force that had not been apparent 30 years earlier.

Writing from Riyadh, Saudi Arabia in April 1991, Stewart summed up the meaning of the intelligence accomplishments. He noted, "DESERT STORM was a team effort. The Armed Forces worked smoothly and jointly. The Army teamed up totally, with those of us here enjoying unqualified support from our Army at large. The MI Corps serves as an outstanding micro-example of the overall Army team effort. Virtually every element of MI made a major contribution to the effort here."

Then he gave what he believed were the portents for the future. "In many ways for MI, DESERT STORM stands forth as a harbinger for Army Intelligence operations in this decade and beyond. Our doctrine and soldiers came from the 1980's, and they served superbly here. But technology looked ahead with Non-Developmental Items and prototypes providing communications,

computers, and collection links from Washington to combat divisions. We applied doctrine—innovatively, and we learned about how we must operate in the future. Military Intelligence came of age here in the desert. MI stood up as a battlefield operating system co-equal with all others. It did so because MI delivered. Our challenge now is to modernize and institutionalize what we used and what we learned here. Our Army and our soldiers deserve nothing less.”⁵⁸

The U.S. Army had come a long way in the almost 100 years that separated DESERT STORM from another force projection operation at the turn of the last century. In the Spanish American War, Col. Arthur Wagner and his Bureau of Intelligence were *persona non grata* at the task force headquarters and were sent packing. The cutting edge technology of the day was an observation balloon that, when launched, attracted the enemy fire to a concentration of U.S. troops. When the balloon, riddled with bullets, fell to the ground, it did so amidst the cheers of American soldiers whose position was being made more hazardous by the balloon’s presence. John Stewart and his intelligence team had proved finally that U.S. Army intelligence had come full circle, from the folly of 1898 to the fulfillment of 1991.

Following the Desert Storm experience, an MI Relook panel was reinstated in 1991 with Stewart, the G2 for Army forces in Gulf War, as its head. In view of the new U.S. Army structure, and the reorientation of the mission to force projection, the panel made a number of recommendations. It called for giving the combat commanders a complete picture of the battlefield and targets by using the array of interacting systems envisioned in the earlier Army Intelligence Master Plan to relay the best and most current information from the national and theater levels, while at the same time allowing them to share their own information with those at comparable and higher levels. This would allow for a smaller MI force structure, but one that was still responsive to commanders. There would also be a greater reliance on reserves, like the Utah National Guard’s 300th MI Brigade, to provide linguists in times of crisis.

As Deputy Chief of Staff for Intelligence, Headquarters, U.S. Army Europe and VII Corps from 1991 to 1993, he was responsible for providing the Commander in Chief, U.S. Army, Europe, with threat assessments, and advising him on military intelligence force structure, operations, training, and budgets. He saw to it that the intelligence effort was redirected from its old Cold War foe to the more likely threats posed in Southern Europe, Africa, and the middle eastern states. Here he also had the opportunity to modernize intelligence forces with tech-

nology that would connect the maneuver brigade to US national intelligence agencies.

The Relook Panel laid the groundwork for intelligence organization and doctrine in the 21st century, and it would be Stewart's task, as commander of the U.S. Army Intelligence Center, to implement its recommendations.

In July 1993 he took over the U.S. Army Intelligence Center and Fort Huachuca. During his tour at Fort Huachuca, Stewart had two goals in mind—to prepare MI professionals for war and operations other than war, while preparing the MI Corps for the 21st century. His overarching philosophy was “The Commander Drives Intelligence.”⁵⁹ Early in 1993, the Force Design Update, a crystallization of the MI Relook that he had chaired earlier, was approved by the Army Chief of Staff. The MI Relook had concluded that, although many systems and organizational concepts proved themselves beyond expectations during the Gulf War, there were still areas for improvement. In short, it was determined that the force had to be designed to channel intelligence downward to the combat commander engaged in planning and conducting operations.

The Force Design Update added direct support companies to the divisional MI battalions without increasing the size of those battalions, and balanced the IMINT, HUMINT, SIGINT, CI, automation and communications capabilities within the battalion. MI brigades within the Intelligence and Security Command were restructured to direct their support downward. A Corps MI Support Element was inserted in each theater corps, supported by an Intelligence and Security Command MI brigade. The element was designed to pull down theater and national intelligence to the corps. Support to the theater commander-in-chief was improved with the addition of the all-source analysis system in the theater Joint Intelligence Center, along with interoperable automation and communications systems.

Another of the new constructs to flow from the MI Relook and the Force Design Update was the Deployable Intelligence Support Element. The support element was a tactically tailored, uniquely configured suite of integrated computers, communication, and broadcast-receive systems that were designed to connect a forward-based command and control element with an intelligence base of operations. The supporting hardware systems were built around the Army All-Source Analysis System, integrated with other existing Army and joint intelligence communications capabilities, like TROJAN SPIRIT and TENCAP, two satellite communications systems.

Logically following upon the Force Design Update was the MI Concept of Operations which was adopted in

August 1993. The concept was designed to form the foundation for strategic, operational and tactical level intelligence support to the Army through the year 2002. It relied upon five doctrinal tenets. First, *The Commander Drives Intelligence*, which meant that commanders personally determine the priority of their intelligence requirements, understand the needs of their subordinates, and be familiar with the means and limitations of getting intelligence information. The second tenet, *Intelligence Synchronization*, sought to meld intelligence operations and force projection with the combat commander's concept of operation and specific decision points. The third, *Split-Based Operations*, called for packages like the Deployable Intelligence Support Element to leverage and downwardly focus intelligence support to the combat commander from a dedicated rear-area intelligence support base. The concept put a premium on flexibility and versatility, in the fourth tenet, *Tactical Tailoring*, which called for building the force from the bottom up in a joint and combined operation. The force would be tailored in several tiers and various equipment configurations, depending upon the mission and the level of force projected. *Broadcast Intelligence* was the fifth cornerstone of the MI Concept and envisioned the commander pulling intelligence and targeting information tailored to his needs from a common picture of the battlefield provided by a variety of tactical and national systems.

The doctrinal tenets were integrated into all training conducted at the Intelligence Center. Some of the consequential developments during Stewart's tenure included new doctrinal development and a new MI capstone manual, FM 34-1, *Intelligence and Electronic Warfare Operations*, the basis for all MI doctrine and training.⁶⁰

Upon completing his assignment at the Intelligence Center and Fort Huachuca, Stewart saw the following as his major accomplishments, but he was careful to emphasize that it was the work of a team.

First, I believed that we needed to establish a vision in which the entire Army leadership bought into and we did that. We oriented military intelligence on the Commander—the Commander Drives Intelligence. We promulgated doctrine which is driving our training, and how we're going to train at the combat training centers. It's driving the simulation program and the battle command training program, and it has had a major impact on the Army. The second accomplishment was that we got military intelligence in the mainstream of change. The mainstream of change in the Army is being driven by two processes: Force 21 and the joint venture operations which include the battle labs and the Louisiana Maneuvers, a series of observations and exercises that allows the Chief

to look at how we link into joint operations, and how we provide trained and ready forces for joint commanders to conduct joint operations, whether that's war or operations other than war. We were able to establish a Battle Lab here because of the excellence of our soldiers and our civilians. We captured the imagination of the Army leadership and we are out front. As General Sullivan said during the national AUSA convention in October, "Military Intelligence is at least two years out front of everybody else in the Army." And so we say, "Always Out Front." The third thing I think we did was orient the military intelligence soldier on soldiering. Now you happen to be a military intelligence soldier, but you have to be a soldier first. You have to be physically, mentally, and spiritually ready. And so we put a lot of effort in those three areas.⁶¹

John Stewart ended his 32-year Army career in 1994, eventually heading back to California to work for the defense industry. His life and chosen profession brought him to some busy historical intersections in the final three decades of the 20th century, and untold numbers of U.S. military men and women can be grateful that his values and training prepared him well for those encounters with history. The experiences of Vietnam, Grenada, Panama and the Persian Gulf were each successive learning stages that enabled him to forge and validate beliefs about the crucial importance of military intelligence on the battlefield, beliefs that would underpin intelligence doctrine for the future. On 27 June 1997, he was inducted in the Military Intelligence Hall of Fame at Fort Huachuca, Arizona.

Notes

¹ Interview with author, 28 June 1997, conducted a day before Stewart's induction into the MI Hall of Fame at Fort Huachuca, AZ. Videotape in U.S. Army Intelligence Museum.

² Interview, 28 June 1997.

³ Other key witnesses from Westmoreland's intelligence staff to testify on his behalf were Phillip B. Davidson, Jr., the J2 MACV from June 1967 to May 1969; Daniel Graham, Chief, J2 MACV Estimates; Gains B. Hawkins, Chief, J2 MACV Order of Battle Section; and George Godding, Chief of J2 MACV Intelligence Production. Three of those four men would become general officers and Davidson, Graham and Godding are in the Military Intelligence Hall of Fame.

⁴ Interview, 28 June 1997.

⁵ Brewin, Bob, and Shaw, Sydney, *Vietnam on Trial: Westmoreland vs. CBS*, Atheneum, New York, 1987, p. 261.

⁶ Interview, 28 June 1997.

⁷ Interview, 28 June 1997.

⁸ This resulted in MI Groups, with their fixed regiments, being reorganized to MI Brigades with more flexible battalions better able to

be shaped to the tactical needs of a commander.

⁹ Stewart, Col. John F., "Operation URGENT FURY: The 525th MI Group Perspective," *Military Intelligence*, January-March 1985.

¹⁰ Stewart was the principal planner for the intelligence annex to the operation plan which sought to protect U.S. lives and facilities, take down Noriega, and neutralize and reform the Panamanian Defense Force.

¹¹ As part of Army streamlining in the post-cold-war era, it was disestablished in 1992, its functions being divided up by INSCOM and DIA.

¹² Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story: A View from the G-2, 3d U.S. Army*, unpublished typescript, Riyadh, Saudi Arabia, April 1991.

¹³ *Intelligence Successes and Failures in Operations DESERT SHIELD/STORM*, Oversight and Investigations Subcommittee, House Armed Services Committee, 16 August 1993, in Finley, James P., ed., *U.S. Army Military Intelligence History: A Sourcebook, Volume II, From the Korean War through the Persian Gulf War, Along with Some General History*, U.S. Army Intelligence Center and Fort Huachuca, Fort Huachuca, AZ, 1995. Hereafter referred to as *Congressional Oversight Report*.

¹⁴ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

¹⁵ Scales, p. 173.

¹⁶ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

¹⁷ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

¹⁸ Schubert Frank N., and Kraus, Theresa L., General Editors, *The Whirlwind War: The United States Army in Operations DESERT SHIELD and DESERT STORM*, Center of Military History, United States, Army, Washington, D.C., 1995, p. 107.

¹⁹ Scales, p. 172.

²⁰ Scales, Brig. Gen. Robert H., Jr., *Certain Victory: United States Army in the Gulf War*, Office of the Chief of Staff, United States Army, Washington, D.C., 1993, pp. 164-5.

²¹ Kleiner, Martin S., "Joint STARS Goes to War," *Field Artillery*, February 1992.

²² Scales, pp. 168-9.

²³ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

²⁴ Clancy, pp. 242-3, 251, 263.

²⁵ *Congressional Oversight Report*.

²⁶ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

²⁷ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

²⁸ *Congressional Oversight Report*.

²⁹ Healy, Gerard, "Apaches," *Military Intelligence*, Vol. 17, Number 4, October-December 1991.

³⁰ Scales, p. 184.

³¹ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story*.

³² Scales, p. 179.

³³ *Congressional Oversight Report.*

³⁴ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

³⁵ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

³⁶ Atkinson, Rick, *Crusade: The Untold Story of the Persian Gulf War*, Houghton Mifflin, New York, 1993, p. 235, 267.

³⁷ Interview, 28 June 1997.

³⁸ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

³⁹ Schwarzkopf, Gen. H. Norman, with Petre, Peter, *It Doesn't Take a Hero*, Bantam Books, New York, 1992, p. 430-2, 480.

⁴⁰ *Congressional Oversight Report.*

⁴¹ Interview, 28 June 1997.

⁴² Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁴³ *Congressional Oversight Report.*

⁴⁴ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁴⁵ Clancy, Tom, and Franks, Gen. Fred, Jr., *Into the Storm: A Study in Command*, G.P. Putnam's Sons, New York, 1997, pp. 229, 231.

⁴⁶ *Congressional Oversight Report.*

⁴⁷ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁴⁸ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁴⁹ *Congressional Oversight Report.*

⁵⁰ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁵¹ *Congressional Oversight Report.*

⁵² Clancy, Tom, and Franks, Gen. Fred, Jr., *Into the Storm: A Study in Command*, G.P. Putnam's Sons, New York, 1997, pp. 229, 231.

⁵³ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁵⁴ *Congressional Oversight Report.*

⁵⁵ *Congressional Oversight Report.*

⁵⁶ *Congressional Oversight Report.*

⁵⁷ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁵⁸ Stewart, John F., Jr., *Operation DESERT STORM, The Military Intelligence Story.*

⁵⁹ Describing his personal style of command and management, Stewart said, "I like people and I orient on soldiers and families. I believe human beings make mistakes, so I attempt to tolerate mistakes and power down. I trust my subordinates. I look at my role as being one of shielding them from unnecessary tasks and letting them do the missions. And finally, I'm decisive and I don't like to have my subordinates to be in a position in which they're not certain of their priorities or where they ought to head, so I try very hard to establish good priorities and so on. Within that, I also like participatory leadership in the sense that I like subordinates to sign up for the priorities, so there's a lot of work that I put into that." Interview, 8 No-

vember 1994. On another occasion he described his personal philosophy of leadership this way: "First of all there is patience. You have got to be able to see the long haul and focus on your mission, all the while understanding that you are going to get there. Be patient with people and nurture them along. The second thing is persistence. The art of success, in a lot of ways, is being persistent. Establish high standards and live up to them. Another aspect of the philosophy is presence. The commander has to be visible and continually set the example. Finally is communication. You have to communicate with your people and allow them to communicate with you, so that they will buy into your common goals." Interview, 28 June 1997.

⁶⁰ Finley, James P., *Annual Command History*, 1 January-31 December 1993, U.S. Army Intelligence Center and Fort Huachuca, Fort Huachuca, Arizona, 1994.

⁶¹ Interview, author with Maj. Gen. John F. Stewart, Jr., upon the completion of his assignment as Commanding General, U.S. Army Intelligence Center and Fort Huachuca, 8 November 1994.